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natural orders with hermaphrodite blossoms, which secure cross-fertilization as effectively as if the flowers were of distinct sexes. This treatise is a treasury of observation upon this subject. We have also from the same author an Italian version of a lecture by Dr. E. Müller, on the application of the Darwinian theory to flowers and to the insects visiting the flowers, with extended notes — the whole of which is worthy of an English version. — Eds.

LICHENS. — Since the article entitled “Lichens under the Microscope” was written, I have met with a notice in Krempelhuber (Geschichte der Lichenologie, vol. 1, p. 431) of three fossil lichens, one related to Ramalina, a second to Verrucaria, and a third to Opegrapha; the first two found in the “Keuper,” or upper new Red Sandstone, and the third in chalk.

In regard to the number of the species, it ought perhaps to have been stated that Krempelhuber’s enumeration includes all synonymes and doubtful species, in short everything to which a separate name has been attached. Nylander (Synopsis, 1859) gives the number of species at 1361, which is probably considerably below the real number. — H. W.



ZOOLOGY.

NOTES ON AMERICAN DEER. — I wish to make an early correction through the NATURALIST of an error in my observations as given in my paper entitled “American Cervus.” On page 7 of that paper, I stated that the elk (*C. Canadensis*), like most other quadrupeds, has but one pelage a year. I can now state that it sheds its coat twice a year like all the other species of that genus, which I have had an opportunity of studying.

The shades of color, and the length of the hairs, of the summer coat and its successor, are so nearly alike, and the former is shed and replaced by the latter so gradually, that it is exceedingly difficult to detect the change even when the attention is called directly to it.

In anticipation of some more extended observations on this branch of natural history, allow me to notice a very marked physiological difference between the elk and the three smaller species of the same genus which I now have in my grounds (*C. Virginianus*, *C. macrotis* and *C. Columbianus* Rich). In the elk the

theca extends along the abdomen to within three inches of the umbilicus, and has no pendant prepuce, almost precisely as is observed in the *Bos* family. In the three smaller species named the theca is suspended from a point so near the scrotum that when the animal is standing it occupies a vertical position within half an inch of it, the posterior measurement of which is three to four inches, anterior measurement half that length. The lower half may be described as an exaggerated prepuce, which is entirely wanting in the elk. In this regard but little difference is observed in the three smaller species.

It would be interesting to know to which of these species the moose (*C. alces*) most conforms in this particular, and I hope that you, or some of your correspondents will be able to inform us. — J. D. CATON, *Ottawa, Ill., Nov., 1870.*

OCCURRENCE OF KIRTLAND'S OWL IN MAINE. — A characteristic specimen of the *Nyctale albifrons* Cassin, was shot at Norway, Me., September 14th, by Mr. Clarence M. Smith, and by him presented to the museum of Yale College. It has not been hitherto recorded from New England. So far as known to me, the specimen taken at Racine, Wis., by Dr. Hoy, is the only one previously recorded from the United States. Prof. Baird mentioned another specimen collected by Dr. A. Hall, near Montreal, and in a recent number of the "Canadian Naturalist" (vol. v, p. 103) a specimen is recorded as obtained near Quebec, by Rev. D. Anderson. The early date would indicate that the specimen taken at Norway was resident there, as it was before the southward migration had commenced. In a recent letter Prof. Baird expresses doubt whether the *albifrons* may not prove to be the young of *N. Acadica*. But if so, it is singular that the young of the latter has not oftener been observed in localities where it is common, as in many parts of New England. This question is well worthy of thorough investigation. — A. E. VERRILL.

SPAWNING OF THE CAPELIN. — The Capelin (*Mallotus villosus*), an inhabitant of the northern seas of the Atlantic coast of America, is well known as a bait for cod-fish. It visits the shores during August and September, for the purpose of spawning, when it is so abundant as to darken the sea for miles. There are some peculiarities about the method of its spawning; the females, on approaching the beach, being attended by two males, who hold

the female between them, by means of the ridge of closely set, brush-like scales with which the males alone are provided, so that she is almost entirely concealed. In this state the three run together with great swiftness upon the sand, and in this act the spawn issues from the female, which is simultaneously fertilized. An immense business is carried on in the capture of the capelin as bait for the cod; the French fishermen alone obtaining from the fishing ground off Newfoundland, from sixty thousand to seventy thousand hogsheads annually for this purpose.

ORNITHOLOGICAL NOTES. — In J. A. Allen's "Notes on Some of the Rarer Birds of Massachusetts," in the *NATURALIST* for January, 1870, he says of the Glossy Ibis (*Ibis Ordii*), "It was also taken, as I learn from Mr. Vickery, in New Hampshire, in October, 1858, by Dr. Palmer." I have the specimen in my collection now, an old bird, in full plumage, taken near Lake Winnipiscogee, in the town of Alton, N. H. I have also the Canada Jay (*Perisoreus Canadensis*), and Black-backed, Three-toed Woodpecker (*Picoides arcticus*), both taken in Strafford, N. H. The jay I shot in winter, and the woodpecker was taken late in the fall. I believe the Canada Jay is not mentioned by Mr. Allen as occurring in Massachusetts. It is not improbable that it may be an occasional winter visitant. The Pine Grosbeak (*Pinicola Canadensis*) has appeared in Ipswich during the winters of 1867-68, and 1868-69. I secured one in red plumage, but they were mostly young birds. — CHARLES PALMER, *Ipswich*.

MIMICRY IN INSECTS. — At a recent meeting of the Scientific Committee of the Horticultural Society, a remarkable paper was read by Mr. Andrew Murray, on the subject of Mimetism, especially as exhibited in the instances of the South American butterflies, which have already been discussed in our columns. Mr. Murray adduced a number of arguments which he considered told against the theory that the mimicry had been produced by Natural Selection, and attributed it to hybridization. — *Nature*.

PARASITE ON THE WASP. — Mr. F. Smith exhibited to the Entomological Society of London, *Phora florea*, a dipterous parasite in the nest of the wasp. We have figured and noticed in the *NATURALIST*, vol. 2, p. 196, a similar parasite in the cells of the honey bee living in Europe. Similar flies should be looked for in this country by our enterprising bee keepers.

RINGNECK DUCK.—Mr. G. A. Boardman of Calais, Me., writes that he found several flocks of the Ringneck Duck, *Fulix collaris*, breeding on the river, near Calais, the past season, and that he secured the old and “chicks.” He states that he knows of no other instance of this duck breeding in New England.

MOCKING BIRD IN MAINE.—I found a mocking bird, *Mimus polyglottus*, in the woods up the river this past season. This is the first time the bird has been found in Maine, to my knowledge, and I think it could not have been an escaped cage bird.—G. A. BOARDMAN, *Calais, Maine*.

RED SQUIRRELS NOT RED.—I received in November last a very pretty black specimen of the *Sciurus Hudsonius*, and also a pure white specimen of the same species.—G. A. BOARDMAN, *Calais, Maine*.



GEOLOGY.

DEVONIAN ROCKS IN THE AMAZONIAN VALLEY.—At the foot of the celebrated Serra do Ereré, rechristened Monte do Agassiz by Dr. Silva Continho, in the Province of Grao Pará, Brazil, is an extensive plain on the northern side, composed of coarse shaly sandstones of a reddish color, red, white, and black shales, and very hard cherty beds, all lying quite horizontally, but broken through by a perfect network of heavy trap dykes, which appear on the surface of the plain like ruined walls. The sandstone beds contain fossils of which I secured a large collection. They comprise one or more species of *Dalmanites* of which I have fragments kindly determined for me by Professor James Hall, *Chonetes?*, *Spirifer*, *Leptocoelia*, *Orthisina*, *Orthis?*, *Lingula*, *Discina*, *Tentaculitz*, etc. In a *relatorio* published in the “Diario do Grao-Pará” of Pará, January 5th, 1871, I referred this series of beds to the Devonian. A small collection of the above fossils was referred to Professor Hall, who writes me that “the forms and associations are of Devonian character, and the impression produced from the *tout ensemble* is that they are of the age of the Upper Helderberg group.”

We have now the Devonian age of the Ereré beds, I think, definitely settled, and it is interesting that these are the only Brazilian rocks that we can satisfactorily refer to that age.